

Menexenus exiguus alienigena Günther, 1939 from Sulawesi

P.E. Bragg, 8 The Lane, Awworth, Nottingham, NG16 2QP, UK.

Abstract

The Royal Entomological Society expedition to Sulawesi in 1985 collected a number of phasmids. One of these was reared in captivity for several generations. This species has recently been identified as *Menexenus exiguus alienigena* Günther, 1939. The adults and eggs are described and illustrated, the female and eggs were previously undescribed.

Key words

Phasmida, Sulawesi, Royal Entomological Society expedition, *Menexenus exiguus alienigena*.

Introduction

In 1985 the Royal Entomological Society of London (RESL) organised a year-long expedition to Sulawesi under the title "Project Wallace". The expedition was based at Dumoga-Bone National Park in Sulawesi Utara (North Sulawesi). Jonathan Cocking was a member of the expedition and collected a number of phasmids, one of these species was successfully reared in the UK and was designated as PSG 92 on the Phasmid Study Group's culture list. In addition to those collected by Jonathan Cocking, quite a few preserved specimens of phasmids were collected by expedition member R.K. Butlin. The descriptions below are based on reared material and the specimens collected by Cocking and Butlin. The standard abbreviations of Arnett *et al* (1993) are used for museums.

Menexenus exiguus alienigena Günther, 1939

Menexenus exiguus alienigena Günther, 1939: 73, fig 12(♂). Holotype ♂ (NHMB), Paratype ♂ (SMTD), North Sulawesi, Minahassa, Gunung Lokon & Tomohon.

Günther described *Menexenus exiguus*, with two subspecies, in the same paper: *M. e. exiguus* and *M. e. alienigena*. They differ mainly by the position of the spines on the mesonotum, those of *alienigena* are in the middle of the mesonotum, those of *exiguus exiguus* are positioned closer to the posterior of the segment. The material described here was compared with specimens of *exiguus exiguus* during a brief visit to Dresden (SMTD) in May 2001; the paratype specimen of *alienigena* was overlooked and not examined. I have since examined photographs of both the holotype and paratype. Günther's paper listed two specimens but did not specify a holotype and paratype; however, the specimens are clearly labelled as such, apparently by Günther. The material from the Project Wallace Expedition will be divided between the Natural History Museum, London (BMNH) and the Museum Zoologicum Bogoriense, Bogor (MBBJ).

Material examined

Sulawesi Utara, Dumoga-Bone National Park, Poniki summit.

5♀♀ (BMNH/MBBJ) R.K. Butlin, 1985.

Sulawesi Utara, Dumoga-Bone National Park, BM plot C.

5♂, 4♀ (BMNH/MBBJ) R.K. Butlin, 1985.

Sulawesi Utara, Dumoga-Bone National Park, Muajat 900m.

♀ (BMNH/MBBJ) J. Cocking, 1985.

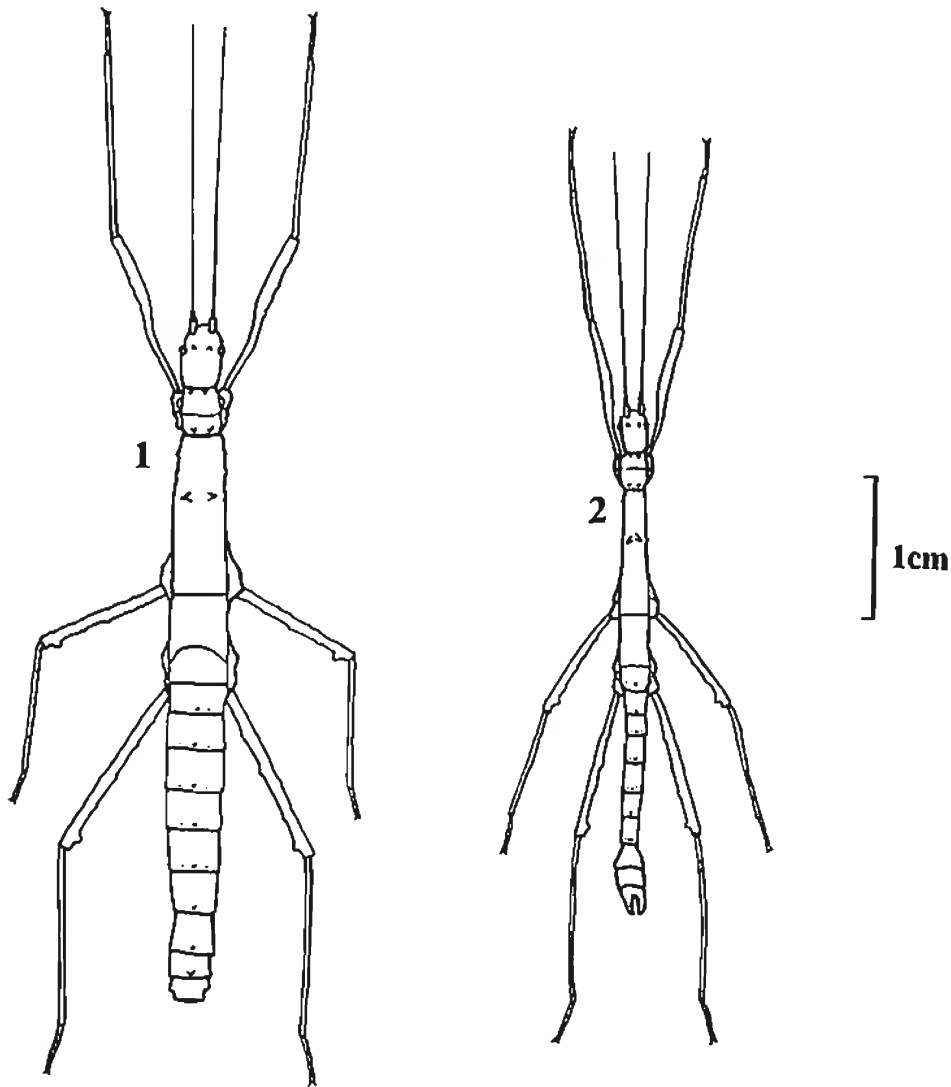
Sulawesi Utara, Dumoga-Bone National Park, Captive reared in U.K.

3♀♀ (PEB-538; PEB-541; PEB-542), 2♂♂ (PEB-539; PEB-540) eggs (PEB-543; PEB-544) P.E. Bragg, 1989.

eggs (PEB-2110) P.E. Bragg, 1990.

1st instar nymph (PEB-1449), ♂ (PEB-1882) P.E. Bragg, 1992.

♂ (PEB-1959) P.E. Bragg, 1993.



Figures 1-2. *Menexenus exiguus alienigena*, dorsal view; 1. Female. 2. Male.

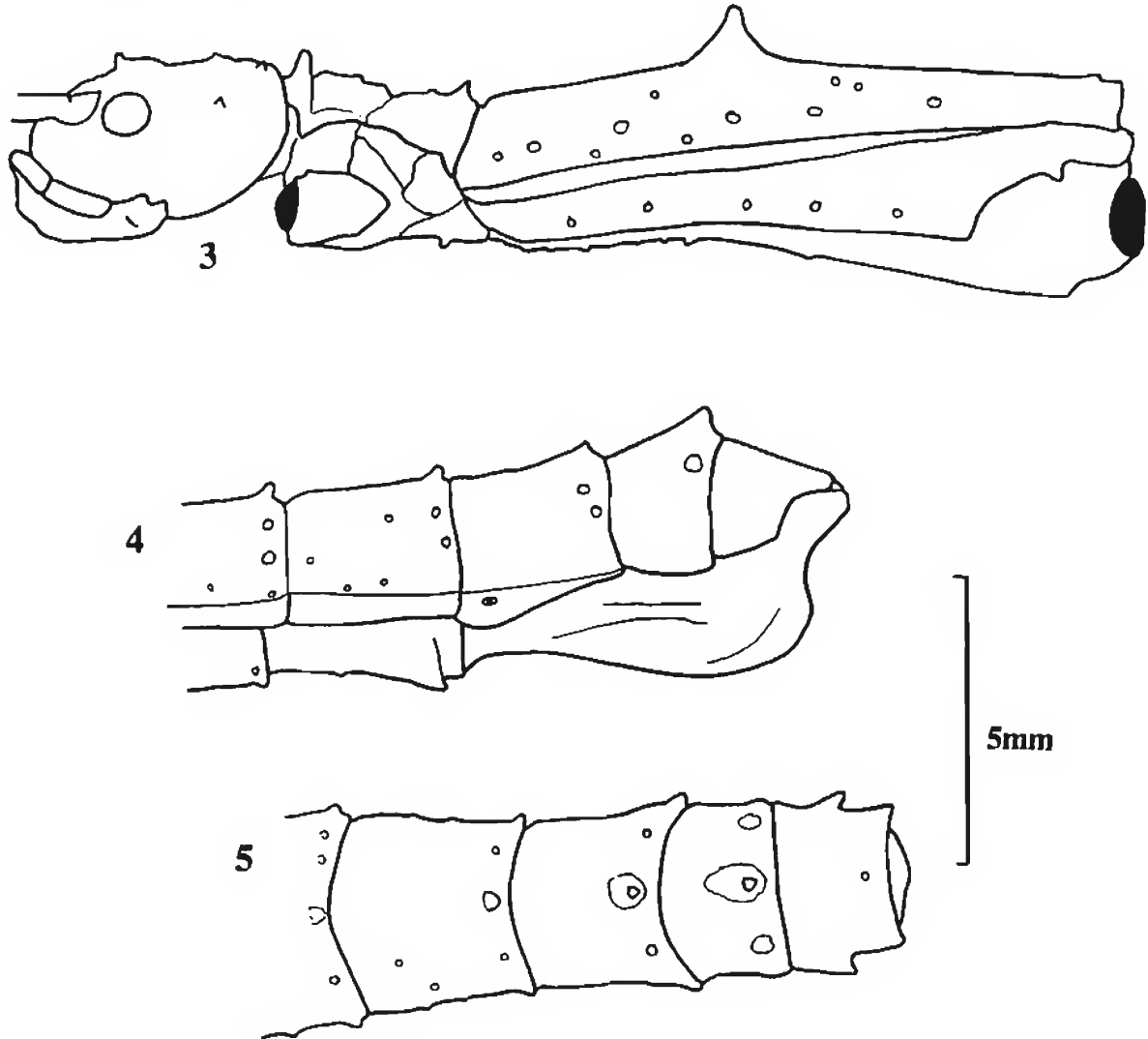
There is considerable size variation amongst the wild-caught specimens; in both sexes the smallest specimens are from Poniki summit; the Muajat specimens are similar in size to those from Poniki summit. There is little size variation in my captive reared specimens and their size suggests that they are derived from the specimens collected at BM plot C; this has been confirmed by Jonathan Cocking (personal communication).

Female (Figs. 1, 3-5)

A typical stick-shaped phasmid, with pro- meso- and metapleura projecting where the legs join the body. Whole insect uniformly dark brown. Body and head roughly granulose, almost tuberculate; wild-caught specimens more obviously granulose than reared specimens. Femora with distinctly tuberculate carinae, some almost like blunt spines; tibiae and tarsi with short setae, femora and prosternum sparingly setose. Body lengths: wild-caught 30-50mm, reared 44.5-50mm. The following description is based on the specimens from plot C and

reared specimens.

Head rectangular, one and a half times longer than wide, with a small pair of spines directly between the eyes on a slightly swollen base. Antennae almost as long as the fore legs; scape and pedicel each twice as long as wide, scape flattened, pedicel rounded and only half as long as scape.



Figures 3-5. Female.

3. Head, pro- and meso-thorax. 4. Apex of abdomen, lateral view.

5. Apex of abdomen, dorsal view.

Pronotum a trapezium, as long as width of posterior; with a pair of small blunt spines on the anterior margin and a similar pair on the posterior margin. Mesonotum slightly widening towards posterior, about three times longer than width at mid-point; with a pair of spines on a swollen mound near the middle of the segment, these spines vary in size but the location is characteristic of the subspecies (those of *M. exiguus exiguus* are positioned one third of the way from the posterior margin). Mesonotum with about five distinct tubercles on each lateral margin. Metanotum and mesonotum with a broad, rather indistinct, longitudinal carina. Metanotum about as wide as long. Median segment with three obvious tubercles on the posterior margin, the central one larger than the others; abdominal segments

2-9 each with similar tubercles, but often smaller and the outer pair may be absent on segments 7-8, the central tubercle on 8-9 has a swollen base; abdominal segments may also have a second pair of very small tubercles on the posterior margin near the lateral margin but often these are almost indistinguishable from granules on the body surface. Segments 2-6 of equal size, rectangular, about one and a half times wider than long; 7th segment narrowing; 7th and 8th narrower than 2-6 and about one and a quarter times wider than long; Segments 8 and 9 almost rectangular; 9th and 10th almost as wide as long. Lamina supraanalis very short. Mesopleura and metapleura with a row of tubercles near the ventral margin. Prosternum and mesosternum tuberculate. Abdominal sternites 2-6 with a single pair of tubercles near the anterior margin and with a slightly raised posterior margin. Praeopercular organ a single blunt spine on a slightly raised mound. Operculum deep, rounded, rugose, posterior margin almost straight. Cerci hidden.

All femora with about eight rounded tubercles on each dorsal carina; middle and hind femora with 4-5 rounded tubercles on ventral carinae, fore femora with slightly uneven ventral carinae, but without obvious tubercles. All femora with a triangular lobe near the apex of the ventroposterior carina; middle and hind femora with a triangular lobe near the apex of the ventroanterior carina. Fore and mid tibiae with very slight tubercle-like irregularities on dorsal carinae; dorsal carinae indistinct on hind tibiae, ventral carinae indistinct on middle and hind tibiae. Basal tarsomere of mid tarsus about as long as tarsomeres 2-4 combined, very slightly longer on fore and hind tarsi.

Specimens from Poniki summit are considerably broader in comparison to their length e.g. for the smallest specimen: mesonotum only slightly more than twice as long as wide (c.f. three times as long), abdominal terga 2-6 two and a half times wider than long (c.f. one and a half times wider than long). The specimens from Muajat are similar to those from Poniki but the spines on the pronotum and metanotum are much smaller, in one specimen the mesonotal "spines" are only tiny tubercles on a slight swelling.

<i>Menexenus exiguus alienigena</i> (Measurements in mm)			♂		♀
			♂	♀	
			Fore femora	6.7-10.0	7.6-11.1
			Fore tibiae	7.6-11.7	7.6-11.9
Total length	25-37	30-50	Fore tarsi	2.7-3.0	?-3.3
Antennae	(> 12)-20.5	(> 10)-17.5	Mid femora	5.7-9.0	6.0-9.6
Head	2.4-3.0	3.0-4.3	Mid tibiae	5.7-9.4	6.0-9.7
Pronotum	1.9-2.3	2.3-3.4	Mid tarsi	2.3-2.7	2.6-3.1
Mesonotum	6.4-9.0	7.1-12.6	Hind femora	7.1-11.1	7.9-12.3
Metanotum	2.7-4.1	2.9-4.9	Hind tibiae	8.1-13.7	8.9-13.6
Median segment	1.1-1.6	1.3-2.1	Hind tarsi	?-3.6	3.3-4.1

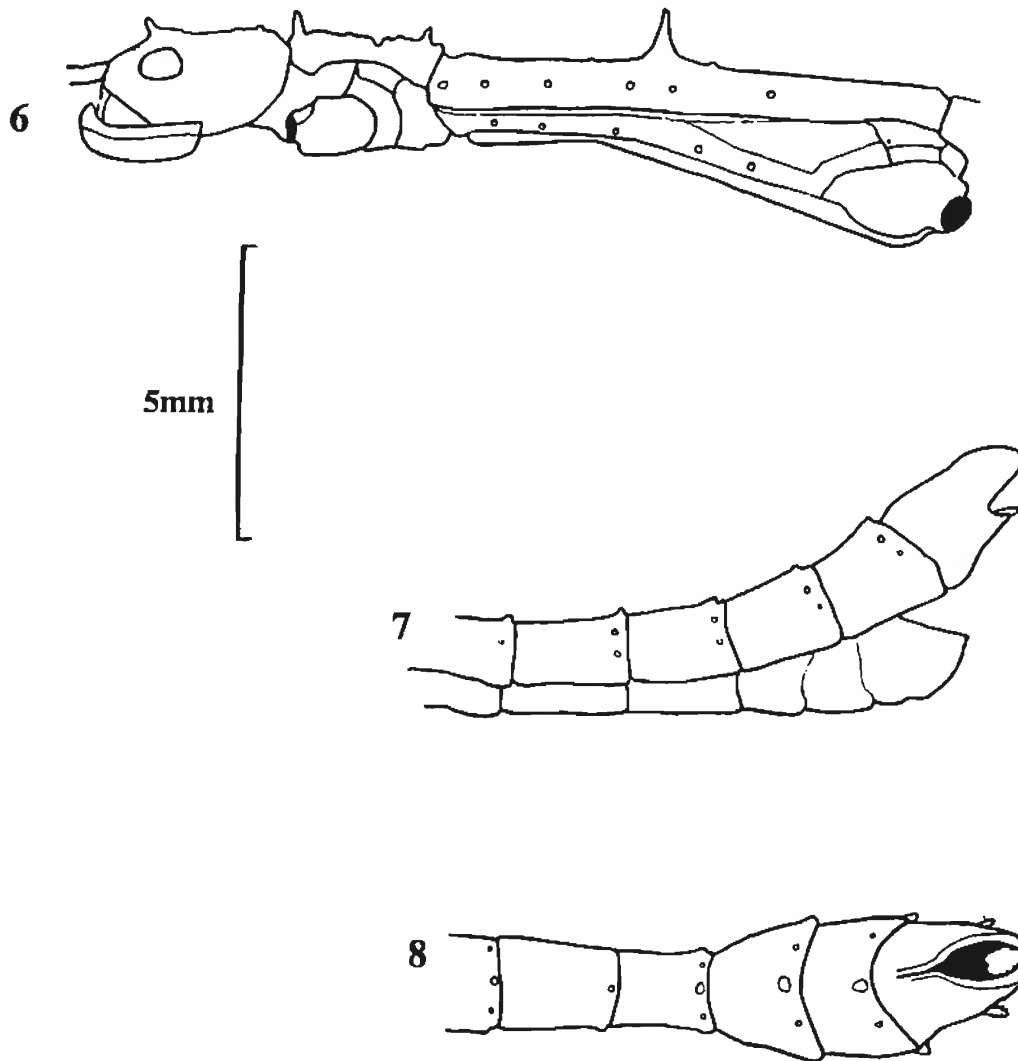
Male (Figs. 2 & 6-8)

Uniformly mid brown. Body and head with very few granules, but tubercles and spines on the body and legs are arranged as in the female. Body lengths: wild-caught 25-35mm, reared 35-37mm. The following description is based on specimens from BM plot C and reared specimens.

Head and antennae as in female. Pronotum very slightly longer than wide, otherwise as in female. Mesonotum four times longer than wide. Metanotum one and two thirds as long as wide. Median segment wider than long. Abdominal terga 2-7 of uniform width and as long as wide; 8-9 trapezoidal: 8th widening, 9th narrowing, 10th deeply split into two

almost triangular lobes. Underside of thorax and abdomen as in female. Poculum rounded, reaching to end of 9th tergum, with a few tubercles. Cerci very short, blunt.

Legs as in female, except the basal tarsomere of fore tarsi are only just as long as segments 1-3 combined.



Figures 6-8. Male.

- 6. Head, pro-thorax and mesothorax; 7. Apex of abdomen lateral view;
- 8. Apex of abdomen, dorsal view.

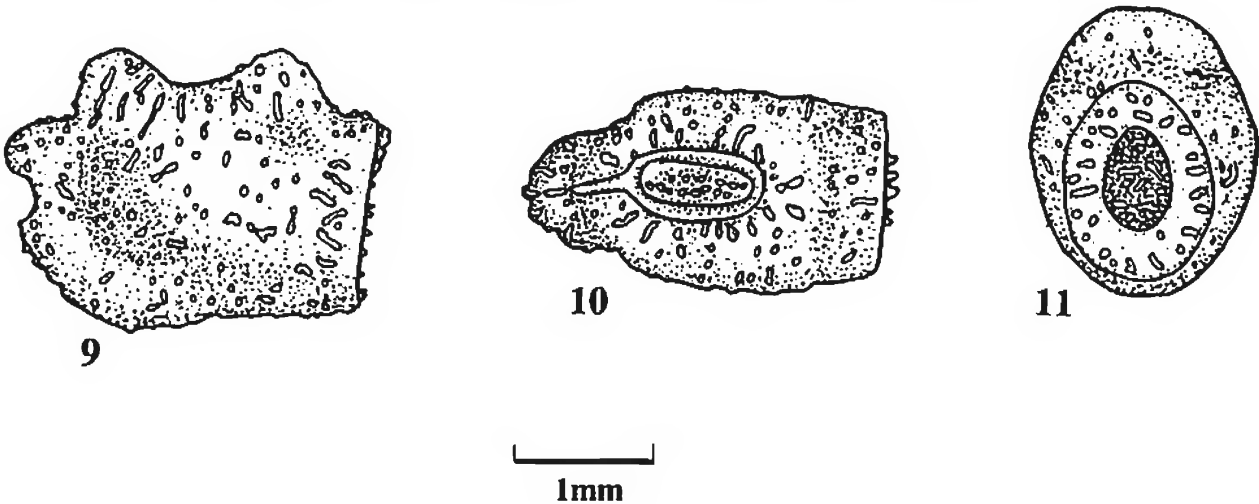
Egg (Figs 9-11)

The following description is based on reared material only.

Whole of capsule, including operculum and micropylar plate, uniformly light or mid brown, except for a dark brown depression in the operculum. Capsule and operculum covered in tubercles and short irregular ridges. Capsule a rough cuboid, longer than high and higher than wide; capsule swollen at each end of the micropylar plate, and at the opercular end of the lateral surfaces; polar mound large but with a small indentation. Micropylar plate deeply sunken into the capsule, with irregular tubercles. Operculum oval,

higher than wide; with a broad lip and a central oval depression. The egg lacks an opercular collar or capitulum.

Measurements of a typical egg are: length 2.7mm, height 2.1mm, width 1.6mm.



Figures 9-11. Egg: lateral, dorsal and opercular views.

Rearing

In captivity this species fed on bramble and oak. Females laid about 10-15 eggs per week but the eggs were very fragile and the hatch rate was low, usually less than 20%. Incubation took 3-4 months. The survival rate of the nymphs was high in humid conditions, most survived to adult. Nymphs were green on hatching but became brown within a few weeks. They reached adult in about 4-5 months. Some adults lived for over a year.

The culture of this species died out in the mid-1990s.

Acknowledgements

I thank the following people: Bruno Kneubuhler for supplying eggs and notes (incorporated above) on rearing this species in 1988; Jonathan Cocking for the loan of the RESL material which will be deposited in the Natural History Museum (BMNH) and Museum Zoologicum Bogoriense (MBBJ), and for checking details in this paper; Dr R. Emmrich for access to the SMTD collection; Oliver Zompro for the loan of photographs of the type specimens.

References

- Arnett, R.H., Samuelson, G.A. & Nishida, G.M. (1993) *The Insect and Spider Collections of the World. Flora & Fauna Handbook No. 11*. [2nd edition], Sandhill Crane Press, Gainesville, Florida.
- Günther, K. (1939) Orthoptera Celebica Sarsiniiana. II. Phasmoidae. *Verhandlungen der Naturforschenden Gesellschaft in Basel*, 49: 54-92.